TO-DAY'S REPUBLIC:

## WHAT IS NEEDED TO PURIFY WATER FOR A GREAT CITY

Sewer Commissioner Hermann Describes Two Types of Filters Which Might Be Used in St. Louis-Effect of Coagulants-Covered Reservoirs Necessary.

When the Board of Public Improvements reconvenes in the middle of this month and the sessions of the Municipal Assembly are renewed on October 2, the subject that probably will receive the most attention will be the question of selecting a proper method to procure a clear, pure water supply of to procure a clear, pure water supply the convergence of the sand layer, and this quantity of sand can be easily and cheaping waters the minute particles of clay penetrate through the whole layer of sand, clogging it completely. Often within a day, and the expense of replacing or washing it by ordinary means is prohibitive. for St. Louis.

Water Commissioner Find, who has been touring Europe for months, inspecting Old World waterworks, is expected home about September 20, when his observations on filtration will be offered. All the members of the Board of Public Improvements have been giving close study to filtration, and all will have ideas to present.

Sewer Commissioner Hermann, Acting President of the board, has prepared the following description of the two filtration processes now in use and the modes of op-

"When villages expand into cities, springs and wells are no longer adequate to furnish the necessary water supply. Lakes, creeks and rivers must then be sought to furnish this supply. Both lakes and streams are

sists of a basin containing a layer of clean, fine sand, about five feet thick, undertaid by rows of drain tiles, extending from each fine sand, about five feet thick, underiald by rows of drain tiles, extending from each side of the basia to its center line and ending in a large central efficient pape l'ading to the parie water storage receivoir, from which the water is distributed by the city. The operation of this type of filter is equally simple. The raw water enters the basin above the layer of sand and slowly percolates thence the name 'slow sand filter) d'ough it; the coarse matter suspended in the water is retained near the surface of the rand, and organic matter in solution in the raw water is purified in its passage through the sand and organic matter in solution in the raw water is purified in its passage through the sand tayer and the thin filian of goattonus matter which forms on the surface of the simil. Tails film is an essential part of the process of purification, the organic action takes place here; a pure effluent is not obtained until this film has farmed. The slow sand litter removes 39 per cent of the hacteria in the raw water, yielding practically a pure water. This type of filter is practicable only for raw waters, which are comparatively clear, though more or less politics; that is, waters containing grandar matters, which are retained within the upper inch of thickness of the sand layer and do not penetrate through the which else inch in thickness is removed and wasted at linewals of about one mounth and repaired by new sand, or it is temoved, washed with clear water and replaced.

"The slow sand filter is used almost exclusively in Europe (except in Russia, many of whose rivers pass through alluvial solls) and in the Eastern States of this country. Some of the European cities using this type of filter and drawing their raw water from

and in the Eastern States of this country, some of the European cities using this type of filter and drawing their raw water from streams far more poduted than any in this country, are: London, Berlin, Hamburg, Altsoma and Rotterdam. In this country Altany and Poughkeepsie obtain their water from the Hudson, a clear, but highly polluted, stream, and filter it for their people, Philadelphia and Pitaburg have recently determined to sidept this system of water purification, taking their raw water from the rivers on which they are situated. The Albany plant obtains its raw water from the Hudson; it has been in operation cne year; one of the results is the decrease of deaths from typhoid from eighty-five last year to seven this year.

Silt-Benring Water Troublesome. Silt-Bearing Water Troublesome.

"This type of filter is not so successful in purifying waters from slit-bearing streams, in many of which the particles of clay are extremely minute, as small or smaller, in fact, than the bacteria contained in the water. The difficulty encountered consists in the complete clogging of the layer of sand, and the expense of replacing or washing the whole sand layer, in non-slit-bearing over the water surface."

within a day, and the expense of replacing or washing it by ordinary means is prohibitive.

"This difficulty of filtering silt-bearing waters by means of the slow sand filter led to many years of experimenting, the result of which, at the present time, is the mechanical filter, a device not yet perfected sufficiently to be completely satisfactory, but indicating the general principles of construction for filters, which promise to give the best results for purifying waters of this character. The construction of the mechanical filter is not so simple as that of the slow sand filter, it consists of a tank within another tank, the former containing a layer of clean, coarse sand, about three and a half feet thick, undersid by drain pipes centering into a large effluent pipe leading to the purewater reservoir, from which the water is distributed. Suspended above the sand layer is a revolving rake, which is turned by mechanical power.

Operation of Mechanical Filters. and rivers must then be sought to furnish this supply. Both lakes and streams are often pelluted, and many streams are modely or turbid as well as polluted; their water is, therefore, unit for drinking purposes and should be clarified and purified before it is used. This can be done by filtration, which is merely a percolation of water through a layer of sand, which acts both as a strainer and as a medium for an organic process destructive to bacteria. Ties, ashestos and similar porous materials are sometimes used instead of sand, but they have not proven so satisfactory, as clean, sharp sand.

Two Classes of Filters.

"Filters for city water supplies may be divided into two classes—the 'slow sand filter' and the mechanical filter.' The slow sand filter is very simple in construction; it consists of a basin containing a layer of clean, fine sand, about five feet thick, undertaid by rows of drain titles, extending from each side of the basin to fits center line and cuid-"This, in brief, is the general manne of building these filters, sithough there ar

pipe leading to the pure-water distributing reservoir.

"The minute particles of clay still remaining in the water when it reaches the filter pass into the layer of sand penetrating its whole mass; the removal of this clay becomes necessary. This is accomplished by forcing a reverse current of filtered water through the drain pipes upward through the sand layer, thus washing the sand thooughly, and allowing the wash water to flow over the top edge of the inner filtery tank into the space between the two lanks and thence downward into the sewer. When the current is teversed the revolving take is also started. It stirs up the sand layer and thus assists in its proper cleansing. The reverse current is stopped when the wash water, flowing ever the edge of the tank shows clear water, the raw water is then again admitted above the sand layer and the process of filtering is repeated.

The Use of a Congulaut.

"The sand layer must be washed about

and the process of filtering is repeated.

The Use of a Congulant.

"The sand layer must be washed about once in eight hours, and requires about 5 per cent of the water previously filtered. A large number of these filters would be required to surply the wants of a large city. They should be built in units of at least 1,000,000 gallons capacity per day. The largest 'unit' now in paration is about 500,000 gallons. St. Louis present maximum requirement of water is 100,000,000 gallons per day.

"The use of a coagulant can hardly be dispensed with in this type of filter to obtain a clear water; the amount of coagulant (alum or oxide of fron is most generally used) required is very small, and it is precipitated by a time solution before the water passes on to the storage reservoir. The bacterial efficiencey of the mechanical filter; either removes 59 per cent of the bacteria if properly handled by skilled and experienced men. The mechanical filter, however, requires better trained and more intelligent operatives to attain a pure water equal to that of the slow sand filter.

"No large city uses this type of water filter at the present time; Chacimant and Louisville, however, are now preparing to erect such filters for the new extensions of their waterworks; they will take the raw water from the Ohlo River, a stream more polluted, but somewhat less muddy than our own Mississippi.

"Covered pure water storage reservoirs are a necessary part of any filtering plant.

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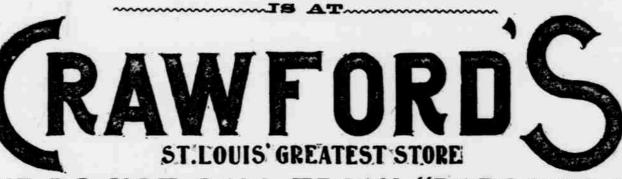
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At \$2.98 we give you as fine a shoe as there is made; we have them in all the different styles, coin, pug or bulldog toes, light, hand turn, medium or heavy extended soles; they are made of the finest imperial kid, well finished and fit, and

Suit Dept. Ladies' fine tailor-made Suit, Jackets lined with good percaline lining, 6.98 Ladies' Fall Jackets, fly-front, lined with nearsilk, 2.59 soft cuffs; were \$1.50 and \$1.25, now ......

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Colored Dress Goods and bright colorings, regular 25c 35c value, for ..... 45-inch extra fine quality Henrietta, the regular 65c 38-inch all pure Wool Venetian Cloth, in popular grays, tans, browns, blues, castor and greens, the best value ever offered, and well 

Wash Goods -200 pieces fall styles in 24-inch Calico, indigo blue, 5c 250 pieces 31-inch Percales, in reds, navy and China blue, in styles suitable for children's school dresses, regular 10c quality, per yard. . . . . . . . . A large variety of colors in our 25c and 35c quality French Sateens, Foulard designs, will close out the lot at, per yard......

Special.

New Fall Millinery A very stylish stitched Felt Hat, trimmed with handsome draped searf falling over the hair; in four

The Lady Roberts-A very chie hat of the season draped with large polka dot silk scarls; in four colors,

A special Turban, fully trimmed, in six colors, ready to wear; worth \$5.00, now ..... The Janice Meredith -A very handsome, stylish hat, 4.98 entirely new, in all the choice colors, for .......

Clothing -Men's fine Worsted Pants, latest stripe and check patterns, cut in the most fashionable style, serviceable linings, regular \$4.00 and \$4.50; 2.98 Youths' Long Pants Blue Cheviot Suits, coat single-breasted sacque cut in newest fall fashion, very durable and suitable for dress or business wear; sizes 14 to 20 years; regu-4.98

lar 87.50; special ...... Boys' Knee Pants Blue Cheviot Suits, pants made with double seat and knees, strongly sewn with linen thread, good farmer's satin linings; regular 84.75,

Boys' Navy and Light Blue Cadet Caps, trimmed with 25c braid, solid patent leather peaks; regular 50c, special. Youths' All-Wool Tweed Pants, dressy patterns in checks, stripes and mixtures, cut in fashionable widths, 

#### Domestics -500 doz. Ready-Made Bleached Sheets, Housefurnishings on Fourth Floor. size 81x90; regular 75c quality 50c 200 doz. Unbleached Sheets, size 81x 90; regular 50c quality— 39c



500 doz. Pillow Slips; regular 10c
12½c quality—Monday at 10c
One case 10-4 Bleached Sheet- 25c
ing; worth 35c—Monday at 22½c
ing; worth 30c—Monday at 22½c
100 doz. Ready-Made Sheets, bleached, slightly soiled, 90x90, were 62½c
One case Soft-Finished Bleached Mus-

FURNITURE DEPARTMENT.

This pretty White Enameled Malleable Iron

Bed, brass rails and spindles, just 4,75

like cut; was \$6.75, now .....

2.98

One case Soft-Finished Bleached Mus-

This Couch in a nice pattern of Reme

This nicely pol-



White China Eowls White China Slop Jars. Fancy Crystal Berry Natural Prenared Dishes, worth 15c: Palms, worth special...........9c 75c; special..........9c



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Berry Natural Prepared Wringers, with
15c: Palms, worth
...9c 75c; special 49c \$1.19



ings, beautiful shapes. 112 pleces, subject to slight imperfections, worth they last

For Ever and for You. The Fatal Rose of Red.

Pliny, Come Kiss Your Baby.

I'd Like to Hear That Song Again.

She Rests by the Suwanee River.

INSTRUMENTAL American Guard March and Two-Step. Light of Hope Waltzes.

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I Can't Tell Why I Love You, but I Do. is specially designed to re-

rated Fruit Plates .... 9c Canvas Covered Trunks, with hardwood slats. well made, worth \$2.75; special \$2.95 Vallses, Club Shape, imita-

alligator, worth \$1.50; spe-Jelly Glasses, Jars, 1 quart, worth 25c doz ; worth 75c doz ,

MASON FRUIT

La Vida, the real whalebone

bias-cut Corset, in many new

straight front effects for ev-

duce abdominal prominence

without increasing waist

measure, and combines grace

and elegance of figure with

Ladies' Imported French Lisle Thread Hose, Richelieu ribbed, tipped white heel and toe, extra high spliced heel and toe; also plain black; were 25c 48c—now.....

Children's Fine Gauge Artificial Silk Hose, 1x1 ribbed, and Fine Fast Black Imported Cotton, spliced heel and toe, double knees, mostly large size; 171cc worth 25c and 35c—3 for 50c, or 172C

Hosiery—Ladies' Topsy Black Lace Lisle Thread Hose, also Imported Cotton, in fancy polka dots and tan color, high spliced heels

and toes, French feet; regular price 25c and 35c.7 for \$1.00, or 15c

Ladies' Fine Gauge Topsy Black Cotton Hose, ribbed tops, full seamless

double heel and toe; were 15c 10c

# PARIS HAS RECEIVED ADEQUATE RETURNS.

### Visitors Have Poured Wealth Into the City. With Much More to Come.

Comte de Penaloza, who has spent most of his life in Paris, though he is of Spanish descent, writes to The Republic upon the success of the French Exposition. The Comte's statement has a special interest arising from the St. Louis World's Fair preparations. The letter:

St. Louis, Sept. 8 .- In the Mirror's number under date of September 6 I find an article on the "failure" of the Paris Exposition, which begins with the following phrase: "Unanimous is the verdict of 'failure' up-

on the Paris Exposition." Who the jury is who rendered the verdict it would be difficult to determine. I suppose it is composed of the editor, the problematicai "poor devil" who writes on space, and the stenographer, with perhaps a few of week, to the exposition two days, and have declared it a failure. That species of trav-

were due to bad management and lack of judgment in execution, but even they are only a very small minority, which has been swelled and made much of through jealousy. Perhaps the Mirror does not know that there exist others, of which the "Swiss Village" is a type, which, far from being failures, have proven even at this early date to be excellent investments, and, more than that, wonderful artistic successes.

I cannot imagine how the Mirror knows that "last week" over 16,000,000 out of the 5,000,000 tlekets issued remained unused." This is again lack of knowledge covered over by a great deal of audacity. I would very much like to see the returns of the Paris railway companies which "show the number of visitors this July to be smaller than in the corresponding month last year." Such a report does not exist and could not be produced.

As to the comparison between Chicago

Such a report does not exist and could not be produced.

As to the comparison between Chicago and Paris it is utterly ridiculous. I grant Chicago had one great superiority, the lake front, but further than that there is not one feature which would compare favorably with Paris, providing always that the lake front he eliminated. The take front is not architecture, and if the Mirror had said that the Chicago Court of Honor and Lagoon were very picturesque, owing to the matural advantages of the site, I would be willing to admit it. To be convinced of the great superiority, artistically, of the Paris Exposition over any ever held, one needs only to see it and be capable of judging. I wonder if "Uncle Fuller" did see it? And, if he did, how qualified he is to judge? As to the other statements he makes they are so biased and so palpably incorrect, that it would be a waste of energy to refute them.

As against mere statements I will submit

declared it a failure. That species of tray elect steepeds six weeks in "doling" Europe, sees all there is to be seen in London in a week and takes no longer to be seen in London in a week and the London in the Chicago Coart of Honor and London in the London in th

MRS. DELIA MILES TELLS OF LIFE IN CAPE NOME.

Describes the Enterprise, Wealth and Characteristics of the Settlers in the Alaskan Gold Fields-How Fortunes Are Made.

There is a woman in St. Louis who, short-y after the rush to the newly opened Alas-tan gold fields, went to Cape Nome, and ly after the rush to the newly opened Alaskan gold fields, went to Cape Nome, and after staying nearly a year in that place

'broke,' as they term it, and are thrown or the city, which sends some of them back to the States; but for the most part they soon engage in other work than mining, in which they are able to make what in the

See our great Pantasote Couches. like and wear better than

which they are able to make what in the States would be designated enormous wages, but, on the other hand, they are compelled to pay fabulous prices for the necessities of life.

"Again, some people seem to think that. Cape Nome is a place where every one carries a big revolver, and no one is safe. The most of the shooting scrapes are caused by litigation over land, which in miners' parlance is called 'claim jumping.' The worst features of the town are saloons and dance halls. Our home was in a good part of town, yet there were two saloons directly across the street. In one portion of the town for two blocks on one side of the street every building is a saloon. The city, however, is organized and has a Mayor and police force, which is backed by a Lieutenant and a company of soldiers of the regular army. On the whole, we have a fine government, considering our situation and surroundings.

Sunrise in Alaska. compelled to pay fabulous prices for the necessities of life.

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"The principal mines are located about five miles from the town. C. D. Lane, the millionaire mine owner of San Francisco, probably has more holdings in the mines in the vicinity of Nome than any other man. He built a narrow-gauge railroad from Nome to Anvil Creek and Snow Gulet, where some of his interests are located. For a distance of about five miles, the fare is \$1 each way.

"When I departed from Cape Nome last summer the days were rather long: in fact the sun was never below the borizon for any great length of time. As winter gave way to spring, the sun would rise, seeming-

#### ease and comfort. Prices, \$2.50 to \$15.00. We Are Sole Agents for La Vida.

PICNIC FOR GERMAN ORPHANS. Will Be Given Next Sunday, Postponed From July 8.

The annual picnic of the German Evangelical-Lutheran Hospital and Orphans' Home Association will be held next Sunday, September 16, in Hoehn's Grove, opposite O'Faiion Park. The picnic was originally scheduled for July 8, but was postponed on account of the street railway strike, and tickets sold for that date will be received at the

The picnic will continue all day. The feature of the morning will be the arrival of the orphans from Des Peres, Mo., at 9 o'clock. The children will be given a light luncheon and will then attend morning service, which will commence at 19:30 o'clock. The sermon will be delivered by the Rever-An afternoon service will be held at 3 o'clock and the Reverend P. A. Poppe will deliver the sermon. A short report of the o'clock and the Reverend P. A. Poppe will deliver the sermon. A short report of the Orphans' Home and hospital will be made at the close of the sermon by President F. Goebel, Male and mixed choirs under the direction of H. W. C. Waltke will render musical selections. The music will be un-der the directions of Carl Schaefer of Em-manuel's Church.

Low-Rate Excaratons Iron Mountain Route,
To points in the West, Southwest and
Southeast, at haif rates (plus 25.00) for the
round trip. Tickets on sale Tuesdays, September 18, October 2 and 16, 1800. H. P.
Berkley, Ticket Agent, Olive street, corner
Broadway, St. Louis.

like and wear better than leather, like cut; were \$30, now 21.00 Ali 50c regular, Cut Price 23c.

ly in the southwest, and after rising but a little way, would seem to sink again beneath the horizon. Every day, however, it would mount a little higher than the day before, and by the middle of summer, before the glow in the sky told of the settling sun, it would rise again. In this season we rarely retired until 1 a. m., and the streets were always crowded with miners, as this is the busy season for them, and 3 o'clock in the morning found about the same number of people on the streets as noon did.

"In the winter the sun rises about 11 o'clock in the forenoon and sets between 3 and 4 in the afternoon. This is a very dull season, still persons manage to enjoy themselves. The coldest weather I have experienced was last winter, when, for about a week, the thermometer registered 49 degrees below zero. This is very rare, the average temperature being about from 30 to 35 degrees below zero in the winter. We suffered no discomfort from the weather, however. The men wear long fur boots in the coldest weather and fur coats and caps, or hoods. The women dress much the same as they do here in the winter, about the only difference being that in Alaska they wear shoes of deerskin, which are very warm. When the weather is extraordinarily cold they wear hoods, but for the most part they use common headgear, as in the States.

"The newspapers are right up to date,"

Fortunes in Newspapers. "The newspapers are right up to date," said Mrs. Miles, unfolding a copy of the Nome Daily News, the principal teature of which was the number of saioon advertise-

cattle and every kind of supplies were brought to the city and the prices went Hot Days in Alaska.

brought to the city and the prices went down.

Hot Days in Alaska.

"In the winter the ice stretches in one long sheet as far out in the ocean as the eye can reach. In one nisht this ice, which is sometimes six feet thick, will break up and float away, and the next morning the bay is as placid as in the summer.

"It is always a time of great excitement when a steamer reaches Nome. The shore is thronged with a black mass of people, eagerly awaiting the arrival of friends, or the mail, of which a great deal arrives on every steamer. Since the rush of last year began business men of all sorts have poured into the city, and there is considerable rivalry in every line. The town now supports fifteen grug stores, and the proprietors all make money. Wages are very high, a carpenter, for instance, sometimes receiving \$1.50 an hour. The hotel rates are in proportion, at one time last summer it being impossible to obtain a room for less than \$100 a month, and hoard was charged at the same ratio. A person could obtain a fair meal for \$1, but it does not take much exertion to eat a \$5 dinner.

"On the whole, I am not sorry that I went to Alaska, and prize the knowledge that I obtained very highly. One thing more—the Indians who inhabit that part of the country have often been described as very numerous and dangerous. Comparatively speaking, there are but few indians in the neighborhood, and the malaria, which is prevalent this year, carried off a great many of them. They are very useful, however, and make nearly all of our fancy baskets and fur clothes. They are considered inoffensive.

"Another prevalent idea is that it is extremely cold in Alaska both summer and winter. In the summer it gets warm enough to be unpleasant, the thermometer often reading as high as \$5 degrees Fahren-heit. Shortly before I returned we took the windows out of the house on account of the heit. When the warmest weather arrives the mosquito is sometimes out, but not in force, or we could not open our windows. The drugsists sell ice cream and cold

in school histories. Several animals are represented and in one place a man seems to be catching a fish, which is much larger than himself. The Indians polish these fragments of teeth and make the drawings with some sort of a liquid which is indelible. Mrs. Miles has several baskets, composed of vari-colored straws woven together and showing that considerable skill has been used in their manufacture. She also has several photographs, one of which shows a ball game on the ice. The others are views of the bay and scenery near Nome. Among her curios is a pair of eagle's clows, the feathers, or fur, which it seems most to resemble, being pure white, and the claws two inches in length. Mrs. Miles said that the natural color of these eagles was a brownish gray, but in the winter the feathers turn white.